The barrier effect is large so as to prevent mutual diffusion of oxygen etc. and spike because the barrier layer consisting of the amorphous or microcrystal does not have clear grain boundary. Therefore, escape of oxygen from dielectric layer can be prevented so as to depress aging dielectric characteristic. Dielectric thin film formed on the amorphous or microcrystal is good in orientation performance so as to be possible to provide dielectric structure high in reliability.

IN THE CLAIMS:

Kindly cancel claim 31 without prejudice or disclaimer.

Kindly amend claims 1, 7, 8, 13, 15 and 32 to read as follows.

1. (Amended) A semiconductor device having an electrode formed on a surface of a semiconductor substrate, wherein said electrode includes a barrier layer consisting of amorphous or microcrystal expressed by an expression of $M1_xM2_{1-x}$ $(0 < x < 1)$, where M1 is selected from a group consisting of Au, Pt, Ir, Pd, Os, Re, Rh, Ru, Cu, Co, Fe, Ni, V, and Cr, and M2 is selected from a group consisting of Ta, Ti, Zr, Hf, W, Y, Mo, and Nb.

7. (Amended) A semiconductor device according to Claim 6, wherein said dielectric layer is PZT.

8. (Amended) A semiconductor device comprising:

a lower electrode formed on a semiconductor substrate;

a dielectric layer formed on said lower electrode and constructed by a ferroelectric or dielectric having high dielectric constant; and

an upper electrode formed on said dielectric layer,

A8 wherein said lower electrode includes a barrier layer consisting of amorphous or microcrystal expressed by an expression of $M1_xM2_{1-x}$ ($0 < x < 1$), where M1 is selected from a group consisting of Au, Pt, Ir, Pd, Os, Re, Rh, Ru, Cu, Co, Fe, Ni, V, and Cr, and M2 is selected from a group consisting of Ta, Ti, Zr, Hf, W, Y, Mo, and Nb.

13. (Amended) A semiconductor device comprising:

A9 a lower electrode formed on a semiconductor substrate;

a dielectric layer formed on said lower electrode and constructed by ferroelectric or dielectric having a high dielectric constant;

an upper electrode formed on said dielectric layer; and

a barrier layer formed between said dielectric layer and said upper electrode, consisting of amorphous or microcrystal expressed by an expression of $M1_xM2_{1-x}$ ($0 < x < 1$), where M1 is selected from a group consisting of Au, Pt, Ir, Pd, Os, Re, Rh, Ru, Cu, Co, Fe, Ni, V, and Cr, and M2 is selected from a group consisting of Ta, Ti, Zr, Hf, W, Y, Mo, and Nb.

15. (Amended) A semiconductor device having

A10 an electrode formed on a surface of a semiconductor substrate,

wherein said electrode is constructed by amorphous or microcrystal single layer expressed by an expression of $M1_xM2_{1-x}$ ($0 < x < 1$), where M1 is selected from a group consisting of Au, Pt, Ir, Pd, Os, Re, Rh, Ru, Cu, Co, Fe, Ni, V, and Cr, and M2 is selected from a group consisting of Ta, Ti, Zr, Hf, W, Y, Mo, and Nb.

32. (Amended) A semiconductor device having

A11

an electrode formed on a surface of a semiconductor substrate,

wherein said electrode includes an amorphous or microcrystal barrier layer made of IrTaPt.

Kindly add new claims 33.

A12

--33. A semiconductor device according to Claim 1, wherein M1 contains Ir and M2 contains Hf.--